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**THE BORDERS  
OF THE  
REPUBLIC OF  
MACEDONIA**

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The book is illustrated with 69 charts, 12 graphic representations, 4 longitudinal profiles and 10 maps. Due to their format, the four longitudinal profiles and maps number 9 and 10 are attached to the book as supplements in a special file.

## INTRODUCTION

The Republic of Macedonia occupies an area which due to its geo-strategic position, natural, historical and development features is considered to be a very complex, in terms of civilisation, and ethnic & demographic heterogeneity, and from a historical viewpoint, polarised territorial system. Since early history, this area has been exposed to confrontation influences and territorial claims. There have also been periods of different historical, anthropological, political and geographical changes. As a result of these changes, constant integration and disintegration processes have taken place in the Republic of Macedonia, thus increasing the need for a thorough study of the area. Studying an area from any aspect, particularly studying a state territory, increases the need for studying its borders and border areas.

The present borders of the Republic of Macedonia were established at the end of the Second World War. On August 2<sup>nd</sup> 1944, the Vardar valley part of Macedonia was proclaimed a republic and it became an equal republic within federal Yugoslavia. Borders of the Republic of Macedonia with the Republics of Albania, Greece and Bulgaria were also state borders of SFR Yugoslavia with these neighbouring countries. After Macedonia gained its independence, the fourth border with Federal Republic of Yugoslavia, which had existed as a border between two republics and it was considered to be an inner border in some studies, was established. Each of these four state borders of the Republic of Macedonia is specific in its own way.

The function of border regions as an integral part of the area, which the Republic of Macedonia occupies, and their specific features can be seen only on the basis of complex and practical geographical studies. Border regions are of great interest to scientific studies not only because of their natural features, their population and agricultural characteristics, but also due to the fact that beside their natural and geographical as well as socio-economic features, they are of great geo-political and geo-strategic importance.

Different historical and geographical events have influenced the present borders of the Republic of Macedonia. Much has been written and said about this, but we need to mention the fact that the present borders do not include the ethnic element of Macedonia. Thus, most of the present borderline is not ethnic, although at certain sectors it goes through mountain ridges and it looks like a natural border. In most of its length it is not an ethnic boundary because in its establishment, the border was not influenced by ethnic considerations, but mostly by military and strategic ones. As such, the border may cause certain political conflicts as well as unresolved ethnical and space problems. That is why there is a need for a thorough study of border regions.

Border regions are specific areas, which have been the subject of different types of scientific research. One of their basic features is that they are territories which have immediate contact with the territories of the neighbouring countries. Although these areas are specific, it is very difficult for them to be studied as a whole because they occupy narrow space along the border that is within other areas inside state territory. Because of this, it is very difficult to identify the differences in demography, economy and strategic development, to see what features are unique to the border region, and what features describe the wider area which contains the particular border region.

The basic characteristics of borders and border regions, together with a historic overview of borders and border regions are given in part one and two of this book. Natural, geographical, social and economic features of each border are also described. The most important geo-strategic features are given in part seven of this book.

This book studies border regions according to the location of settlements and according to certain natural and spatial factors important in determining the function and planning of the development of border regions. Border regions fall into three zones. **The first border zone** comprises the area in which the edges of villages touch the state border and that is practically the first important border zone. **The second border zone** is the area where other villages are joined with the villages from the first zone. **The third border zone** contains all other village settlements within the border region which do not fall in the first and the second zone.

It is impossible to consider these zones to be straight lines, or contour lines, because the area within the border region which comprises the land, the settlements and the population can not be cut in an unnatural way.

This criterion of defining border regions in terms of zones is more realistic than the one which divides border regions into zones simply on the basis of their distance from the borderline (up to 3 km, up to 5 km, and up to 10 km). This will be seen later in the book. The advantage of dividing border regions into zones according to the first criterion is that the distance between the village and the borderline is irrelevant, if there are no other settlements between the village and the line of the border; accordingly, that settlement will fall into the first zone, which seems logical and right.

Nevertheless, the distance of village settlements from the borderline is taken into consideration in order to group settlements and divide them into zones on the basis of the distance from the borderline. This division **does not negate the division of border regions according to the distance of 3, 5, and 10 km** from the borderline; on the contrary, both divisions of border regions overlap and complement one another in many aspects, which adds to getting new qualitative and complete data, especially about the first border zone.

Concerning other elements, physical and geographical features of border regions are presented, as well as grouping of springs and forests in border regions. Streams are grouped according to their location and their flow rate with correct data given, and most of them are marked on a topographic map. Considering the great importance of springs and the large number of them in border regions, the book gives data about the most important springs whose flow rate is more than 1 litre per second. According to data from the Institute for Water Supply of the Republic of Macedonia, springs, according to their flow rate, are grouped into five groups. Furthermore, an important element is the classification of springs and the distinction between permanent springs and permanent but periodic springs, i.e. springs which do not run dry and springs which periodically run dry. Because the flow rate of springs is measured over a particular period of time, data gathered can serve just as orientation because the flow rate varies over a one-year period and over a longer period of time.

Information about the population, the households, the settlements and the land in the borderland are systematised separately for every border region and every border zone separately which helps the collection of concrete data for every part of the border region. Studies done on the demographic changes and the number of households according to the censuses in 1961, 1981 and 1994, as well as research in the field, help in seeing migration processes of the population within the border regions.

A very important determinant for the border regions is the distance of settlements, both from the borderline and from the cities, as well as the dispersion of the population towards the borderline. For this, measurements, mostly in the form of a straight line, have been taken in the three border zones. Five lines were taken as distance parameters for the first zone: 0 to 1 km; 1 to 3 km; 3 to 5 km; 5 to 10 km; and more than 10 km from the borderline. For the other two zones, four lines were taken as distance parameters because it is very difficult to find a settlement in the range of 0 to 1 km from the borderline which does not

belong to the first border zone. Analyses have been done for every border region separately, and every settlement has been recorded. The population and the households along the lines have been analysed as well.

Another important issue is the dispersion of villages according to topographic characteristics. Thus, villages are divided into flat-land, hill and mountain villages. The division is made on the basis of the relief structure of the terrain, and according to the location of villages. If we take into consideration the size, the shape and the length of villages, we need to group them in several groups.

According to The Law on Increasing Development of Insufficiently Developed Regions (Official bulletin of RM, No 2/94), mountainous regions include settlements with an altitude above 800 metres. Border regions include settlements which are at a distance of 5 km from the state border, as well as those settlements which are more than 5 km from the state border, but which are the first settlements in the border region. According to the above mentioned Law, a status of a border region do not have settlements with big industry and built infrastructure.

According to topographic conditions, villages are described as flat-land, hill or mountain villages, though this does not necessarily mean that even if a village is at a slightly higher altitude that it cannot be defined as flat-land or hill village e.g. a flat-land village in the high valley of Lake Prespa (the lake is situated at an altitude of 853 m) can not be treated as hill or mountain village, nor can a village in the short Ruen Mountain be treated as a flat-land village when it is hill or mountain. The Republic of Macedonia, according to its relief structure, looks like a chessboard. Thus, when making a division of villages according to topographic conditions, we need to analyse every valley or a wider region separately, and not just to follow contour lines because this might lead to mistakes and problems.

Beside population and its correlation with certain natural components and the location of settlements form the borderline, for development of settlements and for the establishment of their strategic function it is very important to study the functional contact of villages in the border regions with neighbouring towns and transportation routes between villages.

Important information about the spatial determinants in border regions does not exist in the statistics, nor has much been written about them in the past. That is why this study should be seen as something new and relevant. When it comes to the distance of villages from towns and cities, for each zone there are four groups: up to 5 km, from 5 to 10 km, from 10 to 20 km, and more than 20 km.

When studying a region from every aspect, it is very important to take into consideration its dispersion and position in connection with the wider region it belongs to.

Studying a region from a geo-strategic point of view is very complex. This study regards natural features and limitations within our borders, the demographic processes in the border regions, the locations of the borders, and directions of possible military advances towards the Republic of Macedonia as the most important factors.

The method used in this study, based on complex and multidisciplinary research, can help in identifying phenomena important not only for the development of border regions but also for the territorial integrity of the country.

The Republic of Macedonia, as a newly established independent state, has been facing different problems with its neighbours, and one of the current issues is the issue of state borders. Although the state borders were established after the Second World War, there are still unsettled questions about certain parts of the border. This particularly concerns the disputed locations on the border with FR Yugoslavia which have to be settled in future.

It is known that after the Second World War, different demographic processes took place at the state borders of Macedonia. The main reasons for this were socio-economic

development, and the relations of the Republic of Macedonia with neighbouring countries in the field of economy, etc.

In certain border regions, migration processes and the ageing process have drastically decreased the number of the population, or have resulted in a complete loss of the population. On the other hand, certain border regions have a high concentration of a population of the same ethnic origin.

This study, with all its elements, data and results can serve as a basis for a more detailed study of certain features of the state borders, as well as for the completion of the records about the borders of the Republic of Macedonia in accordance with international standards.

Current development problems in the state should be subject to on-going scientific research.

This book gives a complex study of natural-geographic, socio-geographic and geo-strategic features of the borders and border regions of the Republic of Macedonia accompanied by field research.

The research presents many aspects, but it emphasises only those that relate to questions of essential importance.

Studying borders, border regions and changes that take place in them are of great interest to every country and society.

The objectives of this research are the following: to define **the natural-geographic**, **the socio-geographic**, and **the geo-strategic** features of the borders and the border regions of the Republic of Macedonia, and to create a basis for the completion of the records about the borders of the Republic of Macedonia in accordance with international standards. Taking into consideration the fact that certain changes do occur on the border and in the border regions, this study should contribute to further research of the borderline and the processes which occur in borderlands and regions from many aspects. This study will also point to certain conditions which have been noticed and analysed from a strategic point of view.

The book is illustrated with 69 charts, 12 graphic representations, 4 longitudinal profiles and 10 maps. Due to their format, the four longitudinal profiles and maps number 9 and 10 are attached to the book as supplements in a special file.

## FINAL CONCLUSIONS

The research into the natural-geographic, socio-geographic and geo-strategic characteristics of the borders and the border regions, as well as all the changes which occur in them, are of a wide state interest for any country, and especially for the Republic of Macedonia because Macedonia has always been under the influence of many pretensions.

In terms of territory, the Republic of Macedonia is not a very big country. Its territory covers an area of 25 713 km<sup>2</sup>. However if its location in the Balkan Peninsula is taken in consideration, Macedonia has a very favourable geographical location with important latitudinal and longitudinal communications. Thus the Republic has a very important geo-strategic location and this is an important element for its economy and development.

On the basis of the direction of the extension of the borderlines it can be said that they are almost parallel; that is the northern with the southern and the eastern with the western. The first two have a longitudinal orientation with a slight deviation towards East-Northeast and West-South-West. The second two have a latitudinal orientation with a deviation towards North-Northwest and South-Southeast.

The geometric picture of the state territory of the Republic of Macedonia has a very compact rectangular shape with softened angles or deformed ellipsis.

With some small deviations the following can be said:

- the southern border is almost in its entirety the border with the Republic of Greece;
- the western border is almost in its entirety the border with the Republic of Albania;
- the northern border is almost in its entirety the border with the FR of Yugoslavia,

and

- the eastern border is almost in its entirety the border with the Republic of Bulgaria.

All four borders comprise the complete state border along whose length there are many curves and linear anomalies which influence the percentage of the deviation from the straight line, that is the coefficient of deviation from the straight line.

In my view for the coefficient of deviation from the straight line (C) the following criteria should be accepted:

- for C from 1 to 1.1 the deviations are insignificant;
- for C from 1.1 to 1.3 the deviations are small;
- for C from 1.3 to 1.6 the deviations are medium;
- for C from 1.6 to 1.8 the deviations are wide, and
- for C over 1.8 the deviations are considered too wide.

The southern and the northern borderline are increased with 3 % for 75 % of their horizontal length because of the terrain structure. The length of the southern border is 261 650.04 metres (255 892.94 m of horizontal length - Profile No1); the length of the northern borderline is 263 759 metres (257 955 metres horizontal length - Profile No3). The western and the eastern borderline increase by 3 % only in certain parts which were estimated to have a slope(deviation) of about 20 %. In Profiles 2, and 4 the real lengths are presented, because the difference between them and the horizontals is very small, almost insignificant.

Accordingly, the real length of the entire state border is 895 122.63 m. The complete distance in a straight line of the four tripartites is 561 000 m. and according to this, the average coefficient of deviation from the straight line for the entire border is:  $C = 895122.63 \text{ m} : 561 000 \text{ m} = 1.59$ .

According to the suggested criteria the deviation from the straight line on the entire border is somewhere between the medium and the wide deviation.

The calculation of the coefficient C at certain parts of the borderline can be very significant. For example, a big coefficient (over 1.6 that is 1.8) indicates that the borderline curves throughout the general extent of the border.

Looking on the inner side of the border of the Republic of Macedonia for the indentation, bigger deviation coefficient is advantageous, and in contrary for the dent parts bigger deviation coefficient is disadvantageous.

In this concluding part of the study some summarised points and global views will be presented about the entire length of the state border. They are the result of separate research carried out for each of the four parts of the border:

1. The real length of the entire state border.....	895
122.63m	
-with Republic of Greece.....	261 650.04m
-with Republic of Albania.....	192 050.00m
-with FR of Yugoslavia.....	263 759.00m
-with Republic of Bulgaria.....	177 663.59m
<hr/>	
Total.....	895
.....	122.63m

2. Total distance between the final border points measured in a straight line.....	561
000.00m	
-with Republic of Greece.....	172 000.00m
-with Republic of Albania.....	117 900.00m
-with FR of Yugoslavia.....	153 300.00m
-with Republic of Bulgaria.....	117 800.00m
<hr/>	
Total.....	561
.....	000.00m

3. The coefficient of deviation of the border from the straight line:

C = 895 122.63: 561 000.00 = 1.59	
-with Republic of Greece.....	C = 1.52
-with Republic of Albania.....	C = 1.63
-with FR of Yugoslavia.....	C = 1.72
-with Republic of Bulgaria.....	C

Bulgaria.....

= 1.51

4. Type of border according to the area where it passes:

BORDER TOWARD S	TYPE OF BORDER (in m)			T O T A L
	LA ND	W A T E R	L A K E S	
REPUBLIC OF GREECE	236 614.61	5 500.00	1 9 535.43	261 650.04
REPUBLIC OF ALBANIA	145 545.00	1 9 375.00	2 7 130.00	192 050.00
FR OF YUGOSLAVIA	212. 809,00	5 0 950.00	-	263 759.00
REPUBLIC OF BULGARIA	177 663.59	-	-	177 663.59
<b>T O T A L</b>	772 632.20	7 5 825.00	4 6 665.43	895 122.63

5. Type of border according to the hypsometric characteristics (altitude) of the terrain where it passes:

- up to 200m	32	100.00m	(3.6%)
.....			
- from 200m to 300m	11	800.00m	(1.4%)
.....			
- from 300 to 500m	53	000.00m	(6.0%)
.....			
- from 500 to 1000m	215	600.00m	(24.4%)
.....			
- from 1000 to 2000m	403	163.00m	(1.4%)
.....			
- over 2000m.....	167	898.94m	(19.0%)
<b>Total:</b>		<b>883562.53m</b>	<b>(100 %)<sup>148</sup></b>

<sup>148</sup> The analysis of the hypsometric characteristics is done on the basis of the longitudinal description of the borders, which as it was mentioned contain the horizontal lengths of the southern and the northern border without an

6. At one kilometre of border (on land, on lake, or on river) there is an average of 28.7 km<sup>2</sup> of state territory.

7. Except in the northern border, the remaining three present borders of the Republic of Macedonia were determined in 1913. A change was made on the western border where the monastery St. Naum was disputed. With the protocol signed in Florence in 1926 the monastery appertained to Yugoslavia and Yugoslavia gave up Golo Brdo, in which in 27 villages lived Macedonian population. A change was also made on the eastern border that is in the Strumica Plain which belonged to Bulgaria, but after the Neian Agreement in 1919 it was returned to Yugoslavia and the border was moved towards East. The northern border of the Republic of Macedonia was drawn later that is at the end of the second World War. This border was mostly ethnic but it did not coincide with the previous borders of Serbia.

8. From all the four borders only the southern one is mathematically defined, whereas the eastern and the western are marked only on the terrain, and on the northern border there are no border markers.

The destruction of a large number of border markers is very characteristic on the western border . The reasons for this can only be guessed. On the other borders there are no such occurrences.

On the three marked borders there still exist the old markers and the numbers of the border markers. However a new numeration is needed, and on the western border the destroyed border markers should be replaced.

9.	Total	territory	of	the
borderland.....		351.57 km <sup>2</sup>		
-with	Republic	of	17	
Greece.....		8.80 km <sup>2</sup>		
-with	Republic	of	12	
Albania.....		9.20 km <sup>2</sup>		
-with	FR	of	25.	
Yugoslavia.....		80 km <sup>2</sup>		
-with	Republic	of	17.	
Bulgaria.....		77 km <sup>2</sup>		
Total:.....			35	
.....			1.57 km <sup>2</sup>	

The borderlands with the Republic of Greece and the Republic of Albania are determined with mutual agreement. The borderlands with the FR of Yugoslavia and the Republic of Bulgaria in their total length are 100 metres wide with certain extensions near the border crossings, that is 250 metres from both sides of the road and 400 metres in depth.

10.	Total	territory	of	the	border
region.....		6387.42 km <sup>2</sup>			
-with	Republic	of	1951.		
Greece.....		27 km <sup>2</sup>			
-with	Republic	of	11062		

---

(slope)increase on the vertical rise of the terrain. Therefore, the total length of the state border is 883562.53 metres instead of the real one which is 895122.63 metres. The difference is by 11561.1 metres or by 1.3 %.

Albania.....			.40 km <sup>2</sup>
-with	FR	of	1997.
Yugoslavia.....			40 km <sup>2</sup>
-with	Republic	of	1376.
Bulgaria.....			35 km <sup>2</sup>
Total:.....			6387.
.....			42 km <sup>2</sup>

11. The total territory of the borderland and the border region is 6738.99 km<sup>2</sup>.

The territory of the borderland and the border region are measured by planimeter on a topographic map. The total areas are derived from the analysis and the measurements on the four borders. Because of some overlapping on the borders with Republic of Albania, and FR of Yugoslavia (area near the tripartite on [erupa) and on the borders with Republic of Bulgaria and Republic of Greece (area near the tripartite on Belasica), the actual territory of the borderland should be decreased by 129.70 km<sup>2</sup> on the first, and by 123.20 km<sup>2</sup> on the second tripartite, or altogether by 252.90 km<sup>2</sup>.

This means that the actual territory of the borderland and the border region is 6486.09 km<sup>2</sup> ( 6738.99 - 252.90 = 6486.09),<sup>149</sup> which is 25.2 % of the area of the state territory of the Republic of Macedonia (25.713 km<sup>2</sup>).

12. Territory of the village areas in the border region(a total of 384 villages)

is

			609945.5ha (6099.45km <sup>2</sup> )
-territory of the villages I <sup>st</sup> zone			359862.5ha(359
(157villages) .....			8.62km <sup>2</sup> )
-territory of the villages II <sup>nd</sup> zone			158729.9ha(158
(122villages) ....			7.30km <sup>2</sup> )
-territory of the villages III <sup>rd</sup> zone (105			91353.1ha(913.
villages) ...			53km <sup>2</sup> )
Total	(384	villages)	609945.5ha(609
.....			9.45km <sup>2</sup> )

13. In the border region there are seven towns with a total territory of 27.045 hectares (270.45 km<sup>2</sup>): Gevgelija 1419.2 hectares; Struga 825.9 hectares; Debar 1210 hectares; Kriva Palanka 486.2 hectares; Del~evo 2784 hectares; Peh~evo 8291.7 hectares, and Berovo 12028 hectares.

14. The total territory of the village areas (609945.5 hectares) and the territories of the towns (27045 hectares) in the borderland and the border region is 636990.5 hectares, or 6369.9 km<sup>2</sup>. This total territory is 24.8 % of the country's territory (25 713 km<sup>2</sup>). By comparison with the territory mentioned in point 11 of this summary which was obtained by measurement by a polar planimeter, there is a difference of 0.4 % in its percentage of the overall country territory. The difference is minimal but unavoidable because the border

<sup>149</sup> This territory also includes 27.3 km<sup>2</sup> of the area of the Lake Dojran which belong to the Republic of Macedonia. But this does not include the 230 km<sup>2</sup> of the Lake Ohrid nor the 177 km<sup>2</sup> of the Lake Prespa which also belong to Republic of Macedonia.

region covers village areas which do not belong to any of the border zones. There are also village areas which extend out of the border region.

15. According to the relief characteristics of the northern and the eastern border the borders are mainly natural because they pass across the peaks of the border mountains. The southern border is not natural in its entirety because it passes through the Prespa and the Dojran Lakes and the Pelagonija and the Gevgelija Plains. The western border is mainly natural except where it cuts the Ohrid and the Prespa Lakes and the Debar Plain.

16. The climate characteristics of the border of the Republic of Macedonia differ in accordance with the areas through which it extends. There are differences in the air temperature as well as in some other points.

17. In the border region there are 363 springs with a flow rate from 1 to over 30 litres per second, and with a combined flow rate of 4149.2 litres per second. Most of them 126 are situated in the Northern Border Region with a combined flow rate of 1948 litres per second. The smallest number of springs are in the Eastern Border Region 68, with combined flow rate of 149.2 litres per second.

Across certain parts of the border region there are also some important and some less significant rivers. The three tectonic lakes also belong to the border region. The greatest number of the glacial lakes in the Republic of Macedonia, and the six artificial lakes are also in the border region.

18. The forests in the border region cover a territory of 257 024.7 hectares, or 2570.2 km<sup>2</sup>, which is 42.1 % of the territory of the border region or 10 % of the total territory of the Republic of Macedonia. The total area under forests is 906 000 hectares. The forests in the border region represent 28.4 % of the forest fund. The biggest areas under forests are in the Southern Border Region. The Eastern Border Region has fewest forests. The forests in the border region offer the possibility for the development of forestry, but wood processing capacities are lacking.

19. The pastures in the border region cover a territory of 169 049.8 hectares, which is a good basis for the development of sheep breeding. The greatest amount of pasture land (33 %) is in the Northern Border Region, and the smallest (16.3 %) is in the Eastern Border Region.

20. In 1961 the greatest part of the population 86 480 lived in the Northern Border Region, and in the southern 52 217 residents. A third border region in terms of population was the western one with 46 764 residents. In the Eastern Border Region there were fewest residents that is 33 831. In the period by 1994 the Northern Border Region remained as the most populated with 84 487 residents and the western as a second one with 56 604 residents. Then follows the southern with 37 433, and the eastern remained as the least populated with 27 907 residents. Except in the Western Border Region in the remaining ones the size of the population decreased more or less over the years.

21. According to the ethnic structure of the population in the border region of the total number of residents in 1961 the Macedonians presented 60.2 %, the Albanians 22.2 %, the Turks 11.9 %, the Serbs 4.7 %, the Gypsies 0.02 %, the Aromanians(Vlachs) 0.1 % and the other ethnic groups 0.8 %. In the period up to 1994 there were some significant changes in the ethnic structure of the population. Thus, in that year the Macedonians were 51 % of the

total population in the border region, the Albanians 36.7 %, the Turks 7.4 %, the Serbs 3.5 %, the Gypsies 0.22 %, the Aromanians 0.03 % and the others 1.2 %. This means that in the period from 1961 to 1994 the number of the Macedonian population significantly decreased, and the number of the Albanians increased. Also the number of the Turks, Serbs, and Aromanians(Vlachs) decreased and the number of the Gypsies slightly decreased.

22. On the basis of the fact that the population in the borderland is called border population the settlements where they lived are called border settlements.

23. The location of the population on the borderline, as well as of the settlements, is a very important factor for the economic, the strategic and the functional development of the border region. The greatest part of the population in the border region is at a distance of 5-10 km from the borderline. In 1994 there lived 122 235 residents or 5.25 of the total population in the border region.

24. According to the register of the settlements in the statistics, in 1961 in the borderland and the border region there were 384 villages out of which 157 or (40.8 %) were in the first border zone, 122 or (31.8 %) in the second and 105 or (27.3 %) in the third zone. However, even then, there were 377 populated, that is, active villages, and only 3 were without people (Petalino, Manastirec, and Su{ica); 4 villages (Samoilovo, Bajramovci, Od`ovci, and Crnoboci) were formed after 1961. In 1994 the number of the villages in the border region decreased to 356 that is in the period of three decades 21 villages were left without residents.

The process of leaving the villages first affected the smaller villages, then the population size decreased in the medium sized and in the big villages. Only in the Western Border Region from 1961 to 1994 did the number of the medium sized and the small villages decreased, and the number of the big villages increased.

25. The greatest number of the villages (about 50 %) are situated at the distance of 5-10 km from the borderline, and the smallest number of the villages (5.9 %) are situated at a distance of 0-1 km from the borderline.

26. The majority of the border villages (176) that is 45.8 % are situated at an altitude higher than 800 metres, and 32.8 % of the border villages or 126, at altitudes from 500 to 800 metres. The smallest number of border villages that is 84 or 21.8 % are at an altitude of 500 metres.

27. The total territory of the arable land in the border region of the Republic of Macedonia is 141 924 hectares, or 23.3 % of the total border region. In the Western Border Region there is the least amount of arable land that is 13494.2 hectares or 11.8 %. In the Southern Border Region there is the largest area of arable land 49063.5 hectares or 23 % of the total border region. Although in the border region there are conditions for the development of agriculture, the amounts of cultivated land are becoming smaller and smaller. There is no detailed information for the future development of agriculture in this region. The sheep breeding is also in an unfavourable state in the border region, and the reasons are more or less the same as in the other border regions.

28. Industrial capacities are a common sight in the border village areas; mining is carried out in seven villages, and there are also some other disused mines.

29. Traffic is of a great importance for the overall development of the border region. It links the towns and the villages of the region and depends on the distance of the towns from the villages. The estimation is that the connections do not satisfy the needs. Most of the villages communicate via the towns, because there are no direct connections between the villages.

30. Tourism is developed in the vicinity of the lakes and on [ar Planina. At all these locations there are more possibilities than existing facilities. Although there are good conditions for the development of tourism the potentials have still not been fully explored.

31. On the border of the Republic of Macedonia there are 16 border crossings that is one border crossing at each 55 km. This shows the need for opening new border crossings, and there are also possibilities for opening new border crossings.

32. The extension of the borderline is characterised by several specific (debatable) locations. According to the principles for border extension what is specific is the extension of the borderline across the lakes, that is, not one of the three lakes belongs completely to the Republic. There are also some other debatable areas.

33. On the basis of the analysis of the demographic processes in the border region a conclusion can be made that between 1961 and 1994 many changes evolved from a demographic point of view and that is very important from a geo-strategic aspect. On the one hand, many villages were left without residents, in some villages the number of residents drastically decreased. On the other hand, in some areas there were big concentrations of population from the same ethnic group.

The relatively low density of the population in some border regions brought about by the decrease of the number of the border residents, has a negative geo-strategic influence.

The permanent increase of the population from the same ethnic groups in the Western Border Region and in the Northern Border Region, resulted in the formation of special type of border regions on the basis of the specific social and economic characteristics. This situation requires more complex research because this type of border regions are a very important factor from a geo-strategic point of view, that is the territorial integrity of the Republic is affected by these factors.

34. When taking into consideration the natural features of the terrain it can be concluded that from a geo-strategic aspect all the borders are naturally strong with favourable defensive possibilities. The most favourable border sectors with the Republic of Macedonia are defined by the relief features, the natural direction, the development of the communication corridors, and with the strategic importance they hold.

The length of the borderline in the most suitable border sectors for possible military actions is 274 049 m, that is about 31 % of the total length in these sectors. In these sectors there are 220 border villages in which in 1994 there were 122 197 residents that is about 59 % of the total population of the border region. This means that in the most suitable border sectors for potential assault routes, the greatest number of the border villages and the greatest size of the border population are situated.

The total territory of the village areas in the most suitable sectors is 260 426.5 hectares whose territory measured on a map by planimeter is 2570.49 km<sup>2</sup>.

The most open border in this respect is the southern border on which there are the Gevgelija and the Pelagonija natural openings. The biggest natural opening is the Pelagonija and the least suitable from a strategic point of view is the Ka~anik because it is situated close

to the capital Skopje and the Skopje Plain which is very rich and where one fourth of the total population of the state lives.

35. In the process of planning the development of the border region and also in the planning of the defensive measures and activities in this regions, the settlements which are situated in the most suitable border sectors for possible routes for military actions, should have a priority, and above all the settlements from the first border zone.

Since the research in the borders and the border regions are issues of a state importance the changes in these regions should be followed in a systematic, multidisciplinary, linear, and permanent way.

36. On the basis of the analysis, the conclusions and the systematisation of the data presented in this study, the reader may make some additional comparisons, estimates and many new conclusions, depending on his/her interests and in relation to the natural-geographic, socio-geographic and geo-strategic characteristics of the borders of the Republic of Macedonia.

JOVE DIMITRIJA TALEVSKI, Ph. D.

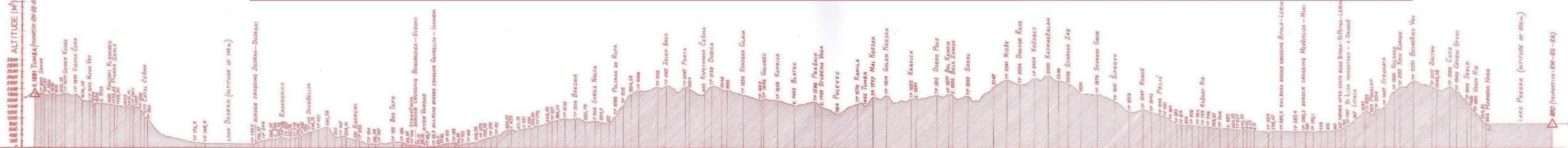
**THE BORDERS  
OF THE  
REPUBLIC OF  
MACEDONIA**

(SUPPLEMENTS)

## **S U P P L E M E N T S**

1. Profile No 1: LONGITUDINAL PROFILE OF THE BORDER BETWEEN MACEDONIA AND GREECE
2. Profile No 2: LONGITUDINAL PROFILE OF THE BORDER BETWEEN MACEDONIA AND ALBANIA
3. Profile No 3: LONGITUDINAL PROFILE OF THE BORDER BETWEEN MACEDONIA AND YUGOSLAVIA
4. Profile No 4: LONGITUDINAL PROFILE OF THE BORDER BETWEEN MACEDONIA AND BULGARIA
5. Map No 9: BORDER ZONES OF THE BORDERS OF THE REPUBLIC OF MACEDONIA
6. Map No 10. THE BORDERS OF THE REPUBLIC OF MACEDONIA

**LONGITUDINAL PROFILE OF THE BORDER BETWEEN MACEDONIA AND GREECE**

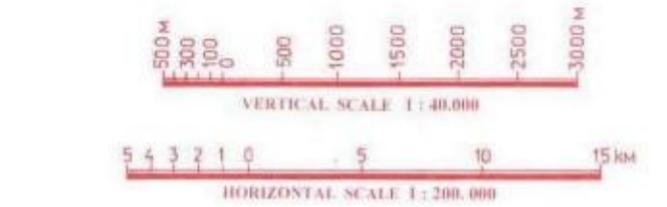


STATIONERY (M)	DISTANCE (M)	ALTITUDE (M)	MAJOR BORDER MARKER	REGION-AREA
1	0.00	1881.00	1	BELASICA MOUNTAIN
2	0.05	1872.00	2	BELASICA MOUNTAIN
3	0.10	1872.00	3	BELASICA MOUNTAIN
4	0.15	1872.00	4	BELASICA MOUNTAIN
5	0.20	1872.00	5	BELASICA MOUNTAIN
6	0.25	1872.00	6	BELASICA MOUNTAIN
7	0.30	1872.00	7	BELASICA MOUNTAIN
8	0.35	1872.00	8	BELASICA MOUNTAIN
9	0.40	1872.00	9	BELASICA MOUNTAIN
10	0.45	1872.00	10	BELASICA MOUNTAIN
11	0.50	1872.00	11	BELASICA MOUNTAIN
12	0.55	1872.00	12	BELASICA MOUNTAIN
13	0.60	1872.00	13	BELASICA MOUNTAIN
14	0.65	1872.00	14	BELASICA MOUNTAIN
15	0.70	1872.00	15	BELASICA MOUNTAIN
16	0.75	1872.00	16	BELASICA MOUNTAIN
17	0.80	1872.00	17	BELASICA MOUNTAIN
18	0.85	1872.00	18	BELASICA MOUNTAIN
19	0.90	1872.00	19	BELASICA MOUNTAIN
20	0.95	1872.00	20	BELASICA MOUNTAIN
21	1.00	1872.00	21	BELASICA MOUNTAIN
22	1.05	1872.00	22	BELASICA MOUNTAIN
23	1.10	1872.00	23	BELASICA MOUNTAIN
24	1.15	1872.00	24	BELASICA MOUNTAIN
25	1.20	1872.00	25	BELASICA MOUNTAIN
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30	1.45	1872.00	30	LAKE DOJRAN
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56	2.75	1872.00	56	LAKE DOJRAN
57	2.80	1872.00	57	LAKE DOJRAN
58	2.85	1872.00	58	LAKE DOJRAN
59	2.90	1872.00	59	LAKE DOJRAN
60	2.95	1872.00	60	LAKE DOJRAN
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62	3.05	1872.00	62	LAKE DOJRAN
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235	11.70	1872.00	235	

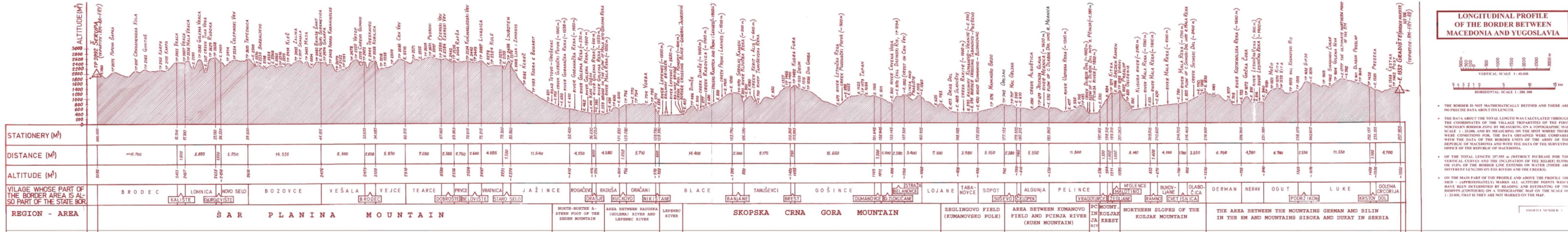


STATIONERY (M)	DISTANCE (M)	ALTITUDE (M)	MAJOR BORDER MARKER	REGION-AREA
000.000		2.092	E-24	KORAB MOUNTAIN
3.194	3.194	2.116	E-25	
4.344	1.150	1.961	E-1	
9.444	5.100	2.062	E-2	
11.371	1.927	2.572	E-3	
14.856	3.485	2.764	E-4	
17.056	2.200	2.465	E-5	
18.631	1.575	2.683	E-6	
25.564	6.913	2.025	E-7	
30.244	4.700	2.045	E-8	
32.924	2.680	2.004	E-9	DEŠAT MOUNTAIN
35.804	2.880	2.373	E-10	
41.894	6.050	2.341	E-11	
43.834	1.980	2.174	E-12	
46.334	2.500	1.523	E-13	
48.834	2.500	910	E-14	
50.504	1.670	585	E-15	
53.559	2.975	462	E-16	
65.659	12.100	494	E-17	
68.959	4.300	578	E-18	
70.609	1.650	720	E-19	DEBAR FIELD
74.159	3.550	856	E-20	
75.624	1.465	745	E-21	
76.524	900	875	E-22	
77.224	700	745	E-23	
78.599	1.375	1.027	E-24	
80.899	2.300	1.158	E-25	
84.619	3.720	1.360	E-26	
89.369	4.750	2.083	E-27	
91.869	2.500	1.538	E-28	
92.569	700	1.536	E-29	RADUČ MOUNTAIN
95.669	3.100	1.410	E-30	
100.199	4.530	2.132	E-31	
101.824	1.625	2.010	E-32	
106.424	4.600	2.257	E-33	
107.424	1.050	1.950	E-34	
108.174	1.700	2.125	E-35	
112.424	3.250	1.919	E-36	
115.724	3.500	1.918	E-37	
117.524	1.600	1.943	E-38	
121.824	4.500	1.642	E-39	
122.024	2.200	1.546	E-40	
126.024	1.000	1.450	E-41	
128.324	2.300	1.372	E-42	
130.874	2.550	1.232	E-43	
131.924	1.050	1.399	E-44	
132.324	400	1.399	E-45	
133.371	1.040	1.370	E-46	
134.141	80	730	E-47	
134.221	80	657	E-48	
137.374	3.175	657	E-49	OHRID BASIN
157.496	20.100	705	Φ-1	
157.571	75	755	Φ-2	
158.236	665	970	Φ-3	
159.266	1.025	843	Φ-4	
160.291	925	925	Φ-5	
161.241	950	783	Φ-6	
161.756	510	885	Φ-7	
161.831	80	885	Φ-8	
164.091	2.260	1.301	Φ-9	
165.411	1.320	1.591	Φ-10	
167.756	2.325	2.265	Φ-11	
169.696	1.950	2.058	Φ-12	
171.286	1.600	2.093	Φ-13	GALIČICA MOUNTAIN
175.156	3.850	1.025	Φ-14	
176.156	1.000	942	Φ-15	
181.806	5.470	1.263	Φ-16	
184.856	3.050	1.246	Φ-17	
185.216	380	1.166	Φ-18	
186.666	1.450	1.142	Φ-19	
188.166	1.500	885	Φ-20	
188.166	30	866	Φ-21	
192.051	3.855	850	Φ-22	

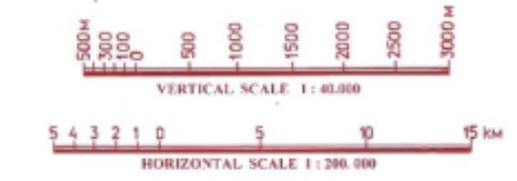
**LONGITUDINAL PROFILE OF THE BORDER BETWEEN MACEDONIA AND ALBANIA**



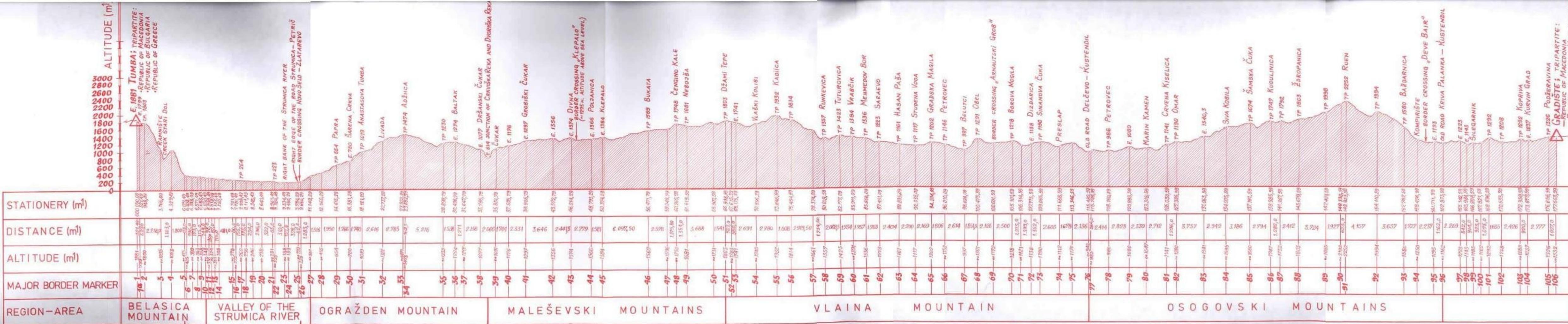
- THE BORDER IS MARKED WITH 71 MAJOR BORDER MARKERS (2 IN SECTION D, 49 IN SECTION E AND 20 IN SECTION F) AND WITH 409 SUBORDINATE BORDER MARKERS.
- THE BORDER HAS NOT BEEN DEFINED MATHEMATICALLY YET, SO THE HEIGHT AND THE POSITION OF BORDER MARKERS HAVE NOT BEEN DETERMINED BY SURVEYING.
- MANY BORDER MARKERS HAVE BEEN RUINED.
- THE DISTANCE BETWEEN MAJOR BORDER MARKERS AND THEIR ALTITUDES HAS BEEN MEASURED BY READING IT FROM A TOPOGRAPHIC MAP SCALE 1:25,000, WITH A SCALE LINE, CURVE METERS (OPISOMETER), AND A BAND ON THE TERRAIN.
- OVER THE LINE OF THE PROFILE ARE SHOWN ALTITUDES OF THE TRIANGULATION POINTS AND ELEVATIONS, TOGETHER WITH THE TOPONIMIES NEAR BORDER MARKERS (UP TO 100 M DISTANCE) WHICH CAN BE SEEN ON A TOPOGRAPHIC MAP ON THE SCALE OF 1:25,000.



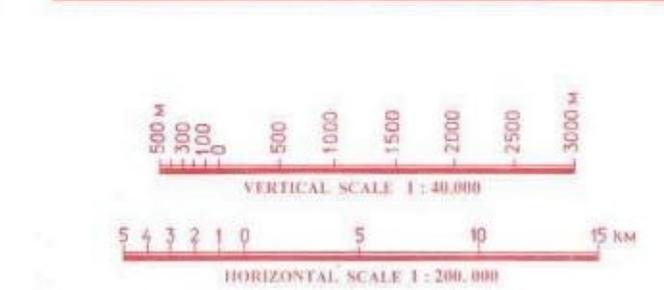
LONGITUDINAL PROFILE OF THE BORDER BETWEEN MACEDONIA AND YUGOSLAVIA



- THE BORDER IS NOT MATHEMATICALLY DEFINED AND THERE ARE NO PRECISE DATA ABOUT ITS LENGTH.
- THE DATA ABOUT THE TOTAL LENGTH WAS CALCULATED THROUGH THE COORDINATES OF THE VILLAGE TRIPARTITES OF THE FIRST NORTHERN BORDER ZONE BY MEASURING ON A TOPOGRAPHIC MAP SCALE 1 : 25.000, AND BY MEASURING ON THE SPOT WHERE THERE WERE CONDITIONS FOR. THE DATA OBTAINED WERE COMPARED WITH THE DATA OF THE BORDER UNITS OF THE ARMY OF THE REPUBLIC OF MACEDONIA AND WITH THE DATA OF THE SURVEYING OFFICE OF THE REPUBLIC OF MACEDONIA.
- OF THE TOTAL LENGTH 257,985 m (WITHOUT INCREASE FOR THE VERTICAL CURVES AND THE INCLINATION OF THE RELIEF) 50,550m OR 19.6% OF THE BORDER LINE EXTENDS ON WATER (THERE ARE DIFFERENT LENGTHS ON THE RIVERS AND THE CREEKS).
- ON THE MAIN PART OF THE PROFILE AND ABOVE THE PROFILE THE SIGN - (APPROXIMATELY) MARKS ALL ALTITUDE POINTS WHICH WERE DETERMINED BY READING AND ESTIMATING OF THE ISOHYPS (CONTOURS) ON A TOPOGRAPHIC MAP ON THE SCALE OF 1 : 25.000, THAT IS THEY ARE NOT MARKED ON THE MAP.



**LONGITUDINAL PROFILE OF THE BORDER BETWEEN MACEDONIA AND BULGARIA**



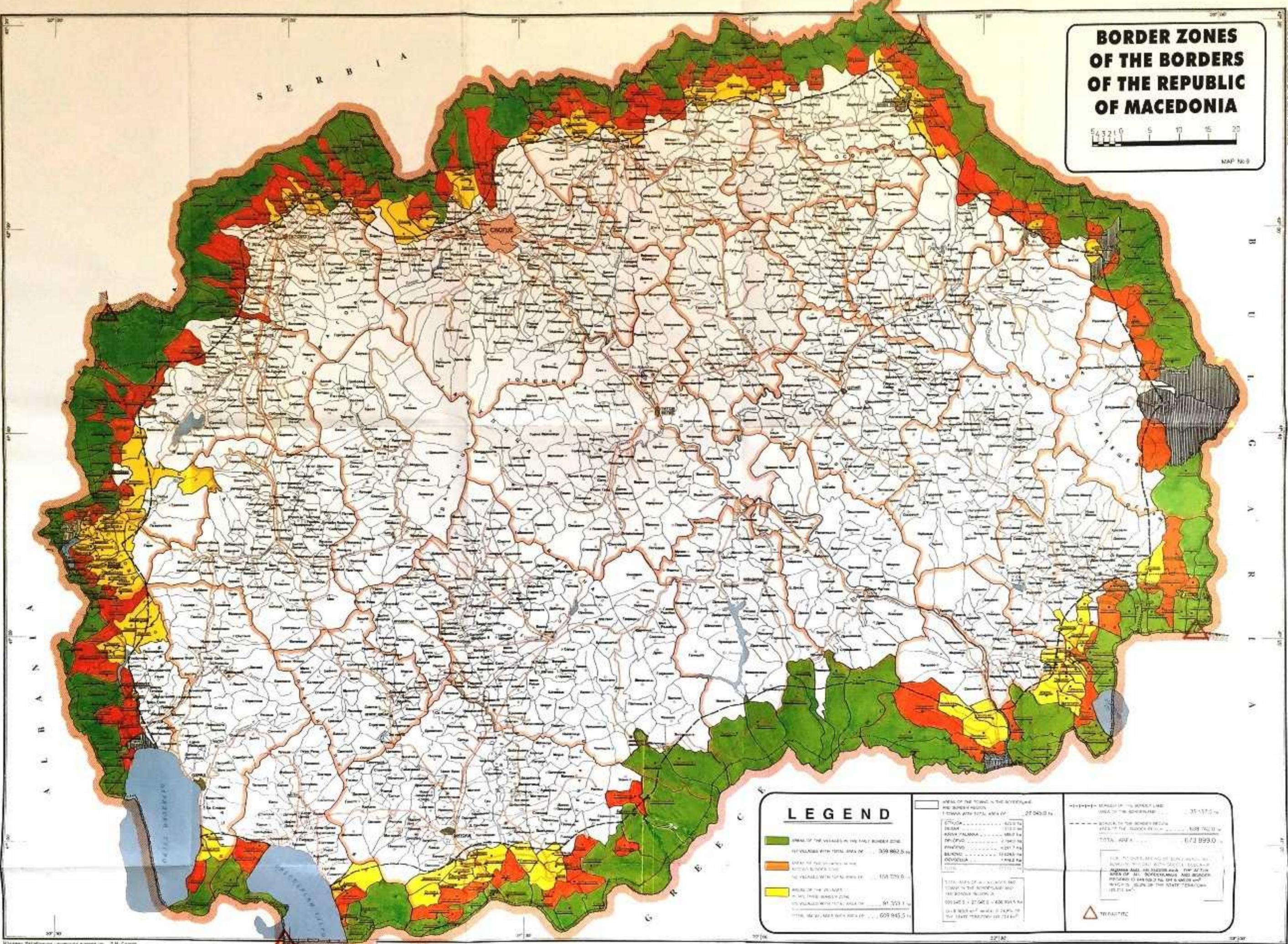
- THE BORDER IS MARKED WITH 106 MAJOR BORDER MARKERS. BETWEEN THE BORDER MARKERS 1 AND 2 ONE MORE BORDER MARKER IS ADDED MARKED AS-1A. BETWEEN THE MAJOR BORDER MARKERS THERE ARE DIFFERENT STONE OR ADDITIONAL GROUND MARKERS. CERTAIN PARTS OF THE BORDER LINE ARE MARKED WITH SHALLOW GROOVES.
- BORDER MARKERS AND OTHER SUBORDINATE BORDER MARKERS ARE NOT DETERMINED IN POSITION AND HEIGHT BY SURVEYING.
- ON THE MAIN PART OF THE PROFILE AND ABOVE THE PROFILE THE SIGN - (APPROXIMATELY) IN FRONT OF THE ALTITUDES OF CERTAIN BORDER MARKERS MEANS THAT THOSE ALTITUDES OBTAINED BY READING ON A TOPOGRAPHIC MAP SCALE 1 : 25,000. THE ALTITUDES OF THE REMAINING MAJOR BORDER MARKERS ARE TAKEN FROM THE BORDER AND TRIANGULATION POINTS IN WHOSE VICINITY THE MARKERS ARE PLACED.
- ABOVE THE PROFILE LINE THE ALTITUDES OF THE TRIANGULATION AND BORDER POINTS ARE REPEATED BUT NOW WITH THE TOPONIMIES IN THE VICINITY OF THE BORDER MARKER (AT A DISTANCE OF UP TO 100 m) AND THEY CAN BE READ ON A TOPOGRAPHIC MAP SCALE 1 : 25,000. BECAUSE OF THE RELATIVELY BIG VICINITIES BETWEEN THE BORDER MARKERS, THE DISTANCES BETWEEN THE MAJOR BORDER MARKERS FROM No 5 TO No 26 ARE GIVEN ON A SCALE OF 1 : 25,000.



# BORDER ZONES OF THE BORDERS OF THE REPUBLIC OF MACEDONIA



MAP No. 9



### LEGEND

- AREA OF THE VILLAGES IN THE FIRST BORDER ZONE  
IN VILLAGES WITH TOTAL AREA OF ... 309 862,5 ha
- AREA OF THE VILLAGES IN THE SECOND BORDER ZONE  
IN VILLAGES WITH TOTAL AREA OF ... 158 725,0 ha
- AREA OF THE VILLAGES IN ALL THREE BORDER ZONES  
IN VILLAGES WITH TOTAL AREA OF ... 81 723,1 ha
- TOTAL VILLAGES WITH TOTAL AREA OF ... 609 945,5 ha

AREA OF THE TOWNS IN THE BORDERLINE OF THE BORDER ZONES	TOTAL AREA WITH TOTAL AREA OF
STIPČUK	622,0 ha
BEŠAN	112,0 ha
ARVA (PALANKA)	862,0 ha
PRILEP	2 190,0 ha
PRILEP	1 017,0 ha
BLINČE	11 028,0 ha
DOVOŠTICA	1 982,0 ha
TOTAL	17 833,0 ha

STATUS OF THE BOUNDARY LINE	AREA OF THE BOUNDARY LINE
STATUS OF THE BOUNDARY LINE	35 117,0 ha
STATUS OF THE BOUNDARY LINE	608 762,0 ha
TOTAL AREA	6 718 993,0 ha

FOR THE DETERMINING OF BOUNDARY LINES BY AIR PHOTOGRAMMETRY WITH CANONIC DISPLAYING APPARATUS AND ALL NECESSARY DATA THE ACTING AREA OF ALL SURVEYING AND BOUNDARY MEASUREMENTS IN THE YEAR 1980 AND 1981 WERE 100% OF THE STATE TERRITORY (82 712 km<sup>2</sup>).